

FIG. 1

120 MEASURING DEVICE
121 TRANSMITTER
122 A/D CONVERTOR
123 FLOWRATE CALCULATION
124 FLOW PROFILE
125 FLOWRATE CALCULATION

CENTER AXIS

FIG. 2

FLOWRATE (mm/s)
POSITION INSIDE FLUID PIPE (mm)

FIG. 3

FLOWRATE V
TRANSDUCER SIDE PIPE WALL
PIPE RADIAL DIRECTION POSITION L
OPPOSITE-THE-TRANSDUCER SIDE PIPE WALL D

FIG. 4

(a)
20 MEASURING DEVICE
21 TRANSMITTER

22 A/D CONVERTOR
23 FLOWRATE CALCULATION
24a FLOW PROFILE (TRANSDUCER 3a)
24b FLOW PROFILE (TRANSDUCER 3b)
25 VOLUMETRIC FLOW CALCULATION

CPU PROCESSING

(b)

20 MEASURING DEVICE

CENTER AXIS

20 MEASURING DEVICE

FIG. 5

EMBODIMENT 1

S201 TRANSMISSION FROM TRANSDUCER 3a
S202 SAMPLING OF REFLECTED WAVE
S203 SAMPLINGS COMPLETED?
S204 CALCULATION OF DOPPLER FREQUENCY
S205 CALCULATION OF FLOW PROFILE ON SIDE OF WALL OPPOSITE TRANSDUCER
3a
S206 TRANSMISSION FROM TRANSDUCER 3b
S207 SAMPLING OF REFLECTED WAVE
S208 SAMPLINGS COMPLETED?
S209 CALCULATION OF DOPPLER FREQUENCY
S210 CALCULATION OF FLOW PROFILE ON SIDE OF WALL OPPOSITE TRANSDUCER

3b

S211 CALCULATION OF OVERALL FLOW PROFILE FROM FLOW PROFILES OF
TRANSDUCER 3a AND TRANSDUCER 3b

S212 CALCULATION OF VOLUMETRIC FLOW FROM OVERALL FLOW PROFILE
END

FIG. 6

FLOWRATE

FLOW PROFILE OF TRANSDUCER 3b

FLOWRATE

FLOW PROFILE OF TRANSDUCER 3a

FLOWRATE

FLOW PROFILE FROM TRANSDUCER 3a AND TRANSDUCER 3b

FIG. 7

EMBODIMENT 2

S401 TRANSMISSION FROM TRANSDUCER 3a

S402 SAMPLING OF REFLECTED WAVE

S403 TRANSMISSION FROM TRANSDUCER 3b

S404 SAMPLING OF REFLECTED WAVE

S405 SAMPLINGS COMPLETED?

S406 CALCULATION OF FLOW PROFILE ON SIDE OF WALL OPPOSITE TRANSDUCER
3a

S407 CALCULATION OF FLOW PROFILE ON SIDE OF WALL OPPOSITE TRANSDUCER

3b

S408 CALCULATION OF OVERALL FLOW PROFILE FROM FLOW PROFILES OF
TRANSDUCER 3a AND TRANSDUCER 3b

S409 CALCULATION OF VOLUMETRIC FLOW FROM OVERALL FLOW PROFILE
END